

Nourtan Abdeltawab, PhD

Department of Microbiology and Immunology
Faculty of Pharmacy, Cairo University
Kasr El-Aini Street, Cairo, Egypt 11562
Cellular +(02) 01122055115
Google Voice +1-(513) 223-3072
Skype: nourtan
Email: nourtan@gmail.com
nourtan.abdeltawab@pharma.cu.edu.eg
LinkedIn: <http://www.linkedin.com/in/nourtan>

Education

Doctor of Philosophy (PhD)

University of Tennessee Health Science Center, Memphis, TN
May 2010

Major: Genetics, Functional Genomics and Proteomics

Dissertation title: Systems biology approach to identifying host interactive pathways modulating the severity of streptococcal sepsis.

Bachelor of Pharmacy (B.Pharm.Sc.)

Faculty of Pharmacy, Cairo University, Cairo, Egypt
May 2002 – Excellent with Honors (See Honors and Awards)

Experience

Assistant Professor (Modaress)

Dept. of Microbiology and Immunology
Faculty of Pharmacy, Cairo University
Cairo, Egypt
October 2011 - Present

Research Experience

- Conducting team-based research project on **pharmacogenetics of hepatitis C virus new therapy in Egyptian population**. Research was awarded L'Oréal-UNESCO For Women in Science fellowship award and For Women in Science **L'Oréal-UNESCO International Rising Talent** award.

-Designed and analyzed genome-wide association studies (GWAS) with multiple collaborators studying differential host response to various diseases. These collaborations resulted in mapping quantitative trait loci (QTLs) associated with differential response to a number of infectious diseases including the following projects:

- Colonization Shiga toxin with **Dr. Angela Melton-Celsa and Dr. Lisa Russo** from Uniformed Services University of the Health Sciences, Bethesda, MD (manuscripts in press)
- Ebolavirus infection with **Dr. Elizabeth Zumbrun** from U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), Fort Detrick, Maryland (see published manuscript section)

- Design and analysis of GWAS data in collaboration with **Dr. Michael Holt and Dr. Ethan Shevach** from NIAID, NIH, Bethesda, MD on mapping genetic loci regulating innate-like phenotype among CD8 SP thymocytes. (manuscript in preparation)
- Conducting team-based research project on identifying the effects of **environmental stress and multi-drug resistance** in both gram positive and negative bacteria and mycobacteria.
 - We study the effect of **metal ions on multi-drug resistance** and biofilm of Staphylococcus aureus (*S. aureus*), and multi-drug resistant *S. aureus* (**MRSA**) clinical isolates in Egypt. This project is conducted by Mrs. Youman AbdelRahman working on effect of zinc and Mr. Mark Medhat, working on effect of nickel on *S. aureus* biofilm formation.
 - Mr. Assem Mohamed studies virulence factors and **multi-drug resistance** in *Serratia marcescens* clinical and environmental isolates in Egypt.
 - Ms. Wala AbdelGhani is undergoing molecular identification and phylogenetic analyses of emerging local **Mycobacterial** clinical isolates and detection of their resistance (**MDR**) to anti-tuberculosis drugs.
- Another area of research I am involved in is immunological aspects of hepatitis viral infections where I am mentoring and supervising
 - doctoral student Mr. Khaled Rakha on differential **Th1/Th2** immune response in **HCV** exposed individuals. (two manuscripts in preparation)
 - master's student Mrs. Samira Eid on **HCV co-infection with Schistosomiasis** and interferon levels in chronic HCV patients. (manuscript in preparation)
- Collaborating and advising masters students in multiple projects on vaccine enhancements:
 - master's student Ms. Assmaa Gohar on formulating a combined **vaccine** for prevention of travelers diarrhea and **diarrhea** in infants in Egypt. (manuscript in press)
 - master's student Ms. Randa Hamed Ali on immunological and efficacy studies on a new combination between **Haemophilus influenzae and Neisseria meningitidis conjugate vaccine**. (manuscript in preparation)
 - master's student Ms. Nourhan Hassan on comparative study on the effect of different adjuvants on the immunogenicity of **hepatitis B vaccine**. (manuscript in preparation)
- Immunogenetics of biosimilars projects, studying anti-EPO antibodies PGt immunogeneticity (Ms. Dina AbdelMoniem) and anti-G-CSF antibodies immunogeneticity (Ms. Samar AbdelSattar) and anti-MPO and PGt (Ms. Aya Tarek).
- Mentoring and supervising doctoral students
 - Mr. Mohamed Taleb in his research on antimicrobial effects of Mediterranean essential oils on **acne-causing microbes** and effects on **skin microbiota**.
 - Mr. Mohamed Habib on discovery of novel robust bacterial **peroxidases** for wastewater treatment. (manuscript in preparation).
 - Mr. Amr Eraki on association of streptococcal infections with psoriasis and gene polymorphisms associated with differential responses to psoriasis.

Community Service Activities

- As executive director of international relations bureau (IRB), designed and organized the **1st International Day at Faculty of Pharmacy Cairo University** – Attendees were from different nationalities and institutes in Egypt – The event was highly rated by participants and faculty members. The day was highlighted in the faculty newsletter and I was awarded a certificate of appreciation by the dean of faculty of pharmacy, Cairo University.
- Organized and held a two days workshop “**Pharmacogenomics (PGx): the way to Personalized Medicine**” – This workshop drew revenue for Faculty of Pharmacy Biotechnology Center (BTC – 009) **May 2015** – Attendees were from different universities and institutes in Egypt – This workshop was highly rated by attendees.
Workshop website <https://eliademy.com/catalog/catalog/product/view/sku/4ced5d0cfb>
- Co-organized “**International One-Day Symposium of Department of Microbiology and Immunology**” at Faculty of Pharmacy, Cairo University. Scientists and principal investigators from United States, Canada, Australia, United Kingdom, Mexico, Brazil, Colombia and Argentina gave presentations about their research for postgraduate students of the department and selected invited audience. The symposium was highly rated by postgraduate students that attended it. The symposium was highlighted in the faculty newsletter and highly appreciated by the department head and dean of faculty of pharmacy, Cairo University.
- Organized and held **departmental journal club** for postgraduate students as part of their required hours for obtaining masters or doctoral degrees. Created and maintained FOPCU Departmental Journal Club Website (<https://sites.google.com/a/pharma.cu.edu.eg/microjournalclub/>)

Postdoctoral Fellow

Dept. of Molecular Genetics, Biochemistry and Microbiology
College of Medicine, University of Cincinnati
Cincinnati, Ohio
July 2010 – August 2012

Research Experience

- Employed **systems biology** approach to elucidate mechanisms of differential host response to group A streptococcal (GAS) sepsis. Performed **systems genetics** and genome-wide transcriptional studies in Advanced Recombinant Inbred (ARI) BXD strains exhibiting differential susceptibility to GAS sepsis. Also, I identified biomarkers that reflect differences in disease severity and progression among these strains.
- Performed studies towards elucidating the role and mechanism of prostaglandin E2 in modulating host differential susceptibility to severe GAS sepsis in collaboration with **Dr. David Aronoff** at University of Michigan, Ann Arbor, MI.
- Designed and analyzed genome-wide association studies (GWAS) with multiple collaborators studying differential host response to various diseases. These collaborations resulted in mapping quantitative trait loci (QTLs) associated with differential response to a number of infectious diseases including the following projects:
 - Shiga toxin with **Dr. Alison O'Brien and Dr. Angela Melton-Celsa**

- Herpes simplex virus with **Dr. Nancy Swatell and Dr. Richard Thompson**
- Traumatic injury immune responses in CLP-induced sepsis studies with **Dr. Charles Caldwell**
- Differential response to asthma with **Dr. Marsha Karp and Dr. Ian Lewkowich**

**Graduate Research Assistant
Researcher, VA Medical Center**

Dept. of Molecular Sciences
University of Tennessee Health Science Center
Memphis, TN
July 2005 – May 2010

Dissertation title: *Systems biology approach to identifying host interactive pathways modulating the severity of streptococcal sepsis.*

Advisor: **Malak Y. Kotb** – Committee: **Linda M. Hendershot, Tony N. Marion, David R. Nelson, Robert W. Williams.**

-Worked towards identifying host immune pathways modulating differential susceptibility to streptococcal sepsis. This was done by applying a systems genetics approach, performing genome-wide association studies (GWAS) and linking phenotypic variation in host responses to variations in genotypes.

-Standardized a mouse model of streptococcal sepsis using advanced recombinant inbred (ARI) panel of BXD mouse strains (Aziz et al 2007, see Peer-reviewed Publications section). These are a genetically diverse reference population that we used to mimic the genetic diversity of human population.

-Mapped quantitative trait loci (QTLs) associated with differential host response to sepsis and parsed them into network of pathways (Abdeltawab et al 2008, Peer-reviewed Publications section).

-Led teams in my mentor's laboratory as part of several high-throughput collaborations including:
 -High-throughput genome-wide transcriptional profiling of mouse spleen across BXD and common inbred mouse strains, completed project was deposited in Gene Network online platform February 2010. URL: http://www.genenetwork.org/dbdoc/UTHSC_SPL_RMA_1210.html
 -High-throughput genome-wide transcriptional profiling CEPH panel (Centre d'Etude du Polymorphisme Humain). Completed project was deposited in Gene Network online platform September 2009.
 URL: http://www.genenetwork.org/dbdoc/UT_CEPH_RankInv0909.html

-Designed, implemented and analyzed multiple collaborative genome-wide association studies (GWAS) to map quantitative trait loci (QTLs) associated with differential response to a number of infectious diseases including the following mouse models projects:

- Tularemia
- Streptococcus pneumonia
- Ectromelia and Vaccinia viruses

-Standardized several procedures in the laboratory and wrote Standard Operating Procedures (SOP).

Publications

Peer-reviewed Articles

Zumbrun, E.E., **Abdeltawab, N.F.**, Bloomfield, H.A., Chance, T.B., Nichols, D.K., Harrison, P.E., Kotb, M., and Nalca, A. Development of a Murine Model for Aerosolized Ebola virus Infection Using a Panel of Recombinant Inbred Mice. *Viruses*. 2012, 4(12), 3468-3493

Kansal, R.G., Datta, V, Aziz, R.K., **Abdeltawab, N.F.**, Rowe, S, and Kotb, M. Dissection of the Molecular Basis for Hypervirulence of an In Vivo-Selected Phenotype of the Widely Disseminated MIT1 Strain of Group A Streptococcus Bacteria. *J Infect Dis*. 2010 Mar 15; 201(6): 855-65

Abdeltawab, N.F., Aziz, R.K., Kansal, R.K., Rowe, S., Su, Y., Gardner, L.A., Brannen, C., Nooh, M., Attia, R., Abdelsamed, H., Taylor, W., Lu L, Williams R.W., and Kotb M. An Unbiased Systems Genetics Approach to Mapping Genetic Loci Modulating Susceptibility to Severe Streptococcal Sepsis. *PLoS Pathog*. 2008 4(4): e1000042

Kotb M, **Abdeltawab N**, Aziz R, Rowe S, Williams RW, and Lu L. Unbiased forward genetics and systems biology approaches to understanding how gene-environment interactions work to predict susceptibility and outcomes of infections. *Novartis Found Symp*. 2008; 293:156-65; discussion 165-7, 181-3

Aziz, R.K., Kansal, R, **Abdeltawab, N.F.**, Rowe, S.L., Su, Y, Carrigan, D, Nooh, M.M., Attia, R.R., Brannen, C., Gardner, L.A., Lu L, Williams R.W., and Kotb M. Susceptibility to severe Streptococcal sepsis: use of a large set of isogenic mouse lines to study genetic and environmental factors. *Genes Immun*. 2007 8(5): 404–415

Books and Book Chapters

Abdeltawab, N.F. (2011). *Systems Biology Approaches in Infectious Diseases: Host Pathways Modulating Differential Response to Invasive Group A Streptococcal Sepsis*. Saarbrücken, Germany: LAP LAMBERT Academic Publishing GmbH & Co. KG.

Kotb, M., **Abdeltawab, N.F.**, Aziz, R.K., Rowe, S., Lu, L., and Williams, R.W. (2008). Genetic Effects on Environmental Vulnerability to Disease. In Sir Michael Rutter (Ed.) *Genetic Effects on Environmental Vulnerability to Disease: State of the Art and Future Directions*. Chapter 10:156-168. Hoboken, NJ: Wiley life Sciences.

Kotb, M, Williams, RW, **Abdeltawab, N.F.**, Nooh, M, Rowe, S, Kansal, R, and Aziz, R. (2008). Biotools for Determining the Genetics of Susceptibility to Infectious Diseases and Expediting Research Translation Into Effective Countermeasures. In Vassil St. Georgiev, Karl A. Western, and John J. McGowan (Ed.). *National Institute of Allergy and Infectious Diseases: Frontiers in Research (Infectious Disease)*. Chapter 1:13-18. Totowa, NJ: Humana Press.

Selected International Conferences Oral and Poster Presentations (6 from 36 total)

7th ASM conference on Biofilm

Chicago, IL

October 2015

Poster: Mark M. Abdel-Masseh, Nourtan F. Abdeltawab, Yasser A. M. Ragab, Aisha Salama.
Effect of Nickel on biofilm formation in Staphylococcus aureus clinical isolates

L'Oréal-UNESCO For Women in Science International Rising Talent award

Sorbonne, Paris, France

March 2015

Pharmacogenetics of Hepatitis C virus new therapy in Egyptian population

12th Annual UT-ORNL-KBRIN Bioinformatics Summit

Buchanan, TN

March 2013

Abdeltawab, N.F. and Kotb M. Bioinformatics exploring of host pathways associated with modulation of host differential response to group A streptococcal sepsis.

11th Annual UT-ORNL-KBRIN Bioinformatics Summit

Louisville, KY

April 2012

Abdeltawab, N.F., Lu L., Williams R.W., and Kotb M. Meta-analysis of genes within QTLs of group A streptococcal sepsis and their expression QTLs reveals additional pathways modulating host differential response to streptococcal sepsis. *BMC bioinformatics* 2012 13 (Suppl 12):A6

111th American Society of Microbiology (ASM) General Meeting

New Orleans, LA

May 2011 – Selected for Oral Presentation ASM Young Investigator

Abdeltawab, N.F., Kansal, R, S. Mukundan, S., Bangar, H., Jiao, Y., Aronow, B., Williams R.W., and Kotb M. Integration of QTL Mapping and Genome-wide Differential Gene Expression Analyses Uncover Underlying Mechanisms Modulating Differential Host Susceptibility to Severe Group A Streptococcal Sepsis.

110th American Society of Microbiology (ASM) General Meeting

San Diego, CA

May 2010

Abdeltawab, N.F., Kansal, R, Williams R.W., and Kotb M. Genomic Biomarkers Associated With Different Outcomes Of Group A Streptococcus Sepsis Reveals Underlying Mechanisms Of Differential Host Susceptibility.

Honors and Awards

For Women in Science L'Oréal-UNESCO International Rising Talent award	2015
L'Oréal-UNESCO For Women in Science Levant and Egypt fellowship award	2014
American Society of Microbiology (ASM) Student Award, ASM general meeting, Orlando, Florida	2006
Dean's award for top 5 distinguished honor students, Faculty of Pharmacy, Cairo University	2002
Amoun pharmaceuticals' award for top 5 distinguished honor pharmacy students	
Chemical Industries Development (CID) award for top 5 distinguished honor pharmacy students	
Arab Drug and Chemical Industries (ADCI) award for top 10 honor pharmacy students	

Academic Service

Director of International Relations Bureau (IRB) at Faculty of Pharmacy, Cairo University	2015 – present
Executive Director of Biotechnology Center at Faculty of Pharmacy, Cairo University	2015 – present
Executive Director of International Relations Bureau (IRB) at Faculty of Pharmacy, Cairo University	2014 – 2015
Judge at University of Cincinnati Science and Engineering Expo	2011 and 2012
College of Graduate Health team supporting Heat Walk with the American Heart Association	2007 – 2008
Participated in Honor Council Court Proceedings at University of Tennessee Health Science Center	2006 – 2008
President of International Student Association (ISA) of University of Tennessee Health Science Center	2006 – 2008
Secretary of International Student Association (ISA) at University of Tennessee Health Science Center	2005 – 2006
Member of the Association of Friends of the National Cancer Institute (AFNCI), Cairo, Egypt	2000 – 2004

Memberships and Professional Affiliations

The International Society for Systems Biology (ISSB)	2012 – Present
American Association of Pharmaceutical Scientists (AAPS)	2012 – 2013
University of Cincinnati Postdoctoral Fellow Association (UCPDFA)	2010 – 2013
National Postdoctoral Association (NPDA)	2010 – Present
Greater Cincinnati Chapter of AWIS (GC-AWIS)	2010 – 2013
Association For Women in Science (AWIS)	2010 – Present
International Society for computational biology (ISCB)	2005 – 2006
American Society of Microbiology (ASM)	2002 – Present

Special Training (selected 3 of 29 total)

“Team building for Team Leaders workshop”	April 2013	DAAD Kairo Akademie with Faculty of Pharmacy, Cairo University (Ms. Sonja Drewes)
“Writing Winning Grants” Grant Writers’ Workshop by Stephen Russell	Fall 2010	University of Cincinnati, Ohio, USA
“Unify Gene Expression Data for Gene Regulatory Network Analysis”	Spring 2010	110th ASM General meeting, San Diego, CA, USA

Languages

Arabic	Native language
English	Bilingual proficiency
French	Limited working proficiency

References

Malak Y. Kotb, PhD (Dissertation and postdoctoral advisor)
Professor, Founding Chair Department of Basic Sciences
University of North Dakota
Grand Forks, ND 58202
(901) 351-1282
mkotbster@gmail.com

Robert W. Williams, PhD (Dissertation committee member and mentor)
Professor, Department of Anatomy and Neurobiology
University of Tennessee Health Science Center
Memphis, TN 38163
(901) 448-7050
rwilliams@uthsc.edu

David R. Nelson, PhD (Dissertation committee member)
Associate Professor, Department of Microbiology, Immunology and Biochemistry
University of Tennessee Health Science Center
Memphis, TN 38163
(901) 448-8303
dnelson@uthsc.edu

Ramy K. Aziz, PhD (co-worker)
Associate Professor, Department of Microbiology and Immunology
Cairo University
Cairo, Egypt 11562
+2 0100-715-8450
raziz1@gmail.com